UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,375	12/18/2001	Lawrence J. DaQuino	10010792-1	2452

7590 05/22/2008

Gordon Stewart
Agilent Technologies, Legal Department, DL429
Intellectual Property Adiministration
P.O. Box 7599
Loveland, CO 80537-0599

EXAMINER	
LAM, ANN Y	

ART UNIT	PAPER NUMBER
1641	

MAIL DATE	DELIVERY MODE
05/22/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/023,375	DAQUINO ET AL.	
	Examiner	Art Unit	
	ANN Y. LAM	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 29-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 18-28 have been canceled.

Claims 1-17 and 29-41 are currently pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-17 and 29-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kneezel et al, 5,939,206, in view of McDevitt et al., 6,713,298.

Chan et al. disclose the invention substantially as claimed. More specifically, as to claims 1, 10, 29 and 30, Chan et al. disclose a pulse jet printhead comprising:

(a) a multiple die printhead comprising:

(i) a single orifice plate (31, see fig. 2) comprising a plurality of orifices (27, see fig. 2);

(ii) a plurality of thermal printhead dies each comprising a top surface (a portion of 30, see col. 19, line 56; it is noted that element 30 is considered to be formed of a plurality of portions of element 30, each portion forming a printhead die)

and bottom surface (i.e., a portion of bottom surface of element (28, see fig. 2 and col. 19, line 55), wherein said top surface (30) comprises a plurality of resistors (33, col. 19, line 56) and is bonded together to a surface of said orifice plate (31, see fig. 2), wherein said resistors are in operational alignment with said orifices to produce at least one firing chamber comprising a resist or the printhead die and an orifice of the orifice plate (see fig. 2); and

(b) a volume of an aqueous fluid (i.e., ink, col. 6, line 9) in said at least one firing chamber.

However, Kneezel et al. do not teach that the fluid is a biopolymer. McDevitt et al. teach this limitation.

McDevitt et al. teach that an array of biopolymers such as DNA and proteins (col. 4, lines 41-44, and col. 5, lines 10-12, 48-50, and 55-59) can be applied onto a substrate through a dispense head that is made using technology essentially identical to that used in "ink-jet" printer heads (col. 101, lines 26-34.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a sample of DNA or proteins as the fluid in the Kneezel et al. printhead because McDevitt et al. teach that providing DNA or proteins in ink-jet printer head technology, such as that taught by Kneezel et al. (col. 1, line 65), provide the benefit of forming DNA or protein sensor arrays, as would be useful to the skilled artisan in the biotechnology art.

Thus, as to claims 6, 7, 9, 15, 16, 17 and 30, McDevitt et al. teach that the biopolymer is polypeptides or nucleic acids (col. 5, lines 55-58.)

As to the following claims, Kneezel et al. teach the limitations as follows.

As to claims 2-3, 11-12 and 31-32, the printhead comprises from 2 to about 10 printhead dies, or 2 to 5 printhead dies, (see fig. 3, showing that there is at least two resistors 33.)

Claims 4, 13 and 33, Kneezel et al. do not specifically disclose that there are 3 printhead dies. However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. In this case, Kneezel et al. disclose the general conditions of the claims, and 3 printhead dies is within an optimum or workable range and thus its discovery involves only routine skill in the art under *In re Aller.*

As to claims 5, 14 and 34, each of the printhead dies is a thermal pulse jet printhead die (col. 6, line 4-10.)

As to claim 8, 10, 35, a fluid reservoir (24, see col. 23, line 8 in fig. 3) is in fluid communication with the firing chamber.

As to claim 36-41, the printhead dies and the single orifice plate are bonded together (see fig. 2.)

Moreover, as to claim 39-41, the multiple printhead dies are parallel to each other (see fig. 2.)

Response to Arguments

Applicants' arguments filed February 6, 2008 been fully considered but are not persuasive.

Applicant states that an element of the present invention is the presence of multiple printhead dies bonded to a single orifice plate. Applicant further states that a given printhead die includes a set of plural activatable pulse generating members and activation elements in the surface of a substrate, citing page 7, lines 14-21 in the specification. Examiner notes however that these features are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Not only are the pulse generating members and activation elements not recited in the claims, there is no specific disclosures as to what these members and elements are. The claims recite resistors such that energization of the resistors causes fluid expulsion through the orifices, and such resistors have been addressed in the grounds for rejection.

Applicant also asserts that the present invention comprises multiple printhead dies bonded to a single orifice plate (page 7, lines 14-21 in the specification), and Examiner has not defined what is a "portion" of element 30 wherein each portion forms a printhead dye. Applicant states that it is not clear how surface 30 is equivalent to a plurality of prinhead dies because nowhere does Kneezel teach or suggest that surface 30 comprises portions.

Applicant makes similar arguments that it is not clear how alleged portions of 30 in Kneezel could teach or suggest the element “wherein said printhead comprises from 2 to about 10 printhead dies” as in claims 2, 11 and 31 or the element “wherein said printhead comprises from 2 to 5 printhead dies as in claims 3, 12 and 32 or the element “wherein said printhead comprises 3 printhead dies" as in claims 4, 13 and 33. Applicant asserts that it is not clear how surface 30 which appears in the drawing and description of Kneezel to be a single unit, can be considered to be multiple printhead dies which are oriented parallel to each other as in claims 37-41.

In response, Examiner notes that there is no requirement that the printhead dies be separate, i.e., non-integral, elements from each other. The claims, in part, require a multiple die printhead comprising: (i) a single orifice plate comprising a plurality of orifices; (ii) a plurality of thermal printhead dies each comprising a top surface and bottom surface, wherein said top surface comprises a plurality of resistors and is bonded together to a surface of said orifice plate, wherein said resistors are in operational alignment with said orifices to produce at least one firing chamber comprising a resist or the printhead die and an orifice of the orifice plate. Thus, the claim requires that the printhead dies each comprise 1) a top surface comprising a plurality of resistors and bonded together to a surface of the orifice plate, and 2) a bottom surface. These limitations, as well as the other recited limitations, are met as described in the grounds for rejection. There is no requirement that the printhead dies each must be non-integral with each other, and thus, portions of element 30 as disclosed in the Kneezel invention comprise all the elements are recited in Applicant’s

claims regarding a printhead dye, which comprises a plurality of resistors and is bonded to a surface of the orifice plate. For example, any two or three adjacent resistors on element 30, i.e., a portion of element 30 comprising a plurality of resistors, is equivalent to a printhead dye as recited by Applicant.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Y. Lam whose telephone number is 571-272-0822. The examiner can normally be reached on Mon.-Fri. 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ann Y. Lam/
Primary Examiner, Art Unit 1641